

FIG. 1 General Radio Frequency Synthesizer
 $f_C = f_1 + f_2 + f_3$

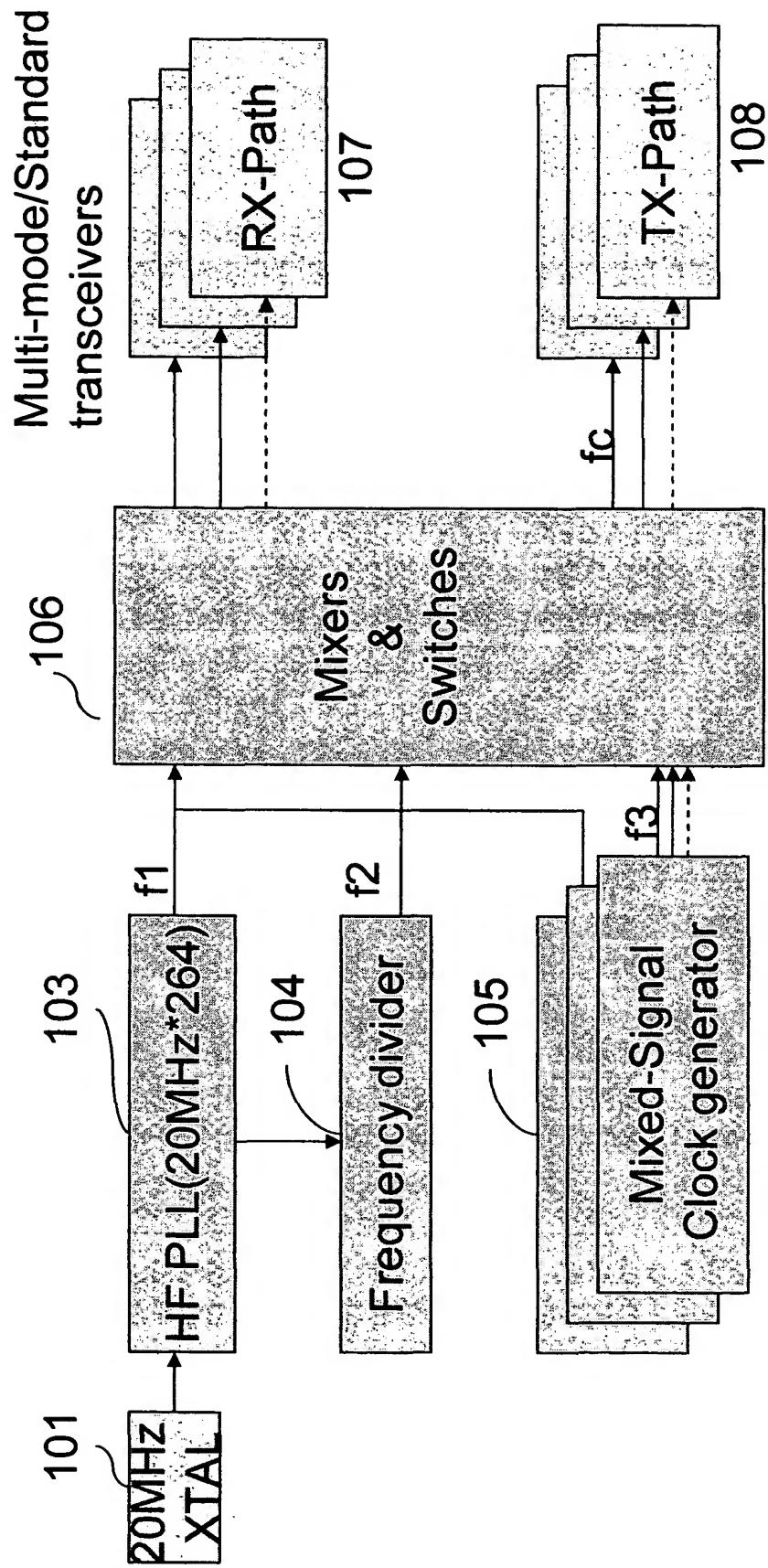


FIG2. Direct Conversion transceiver

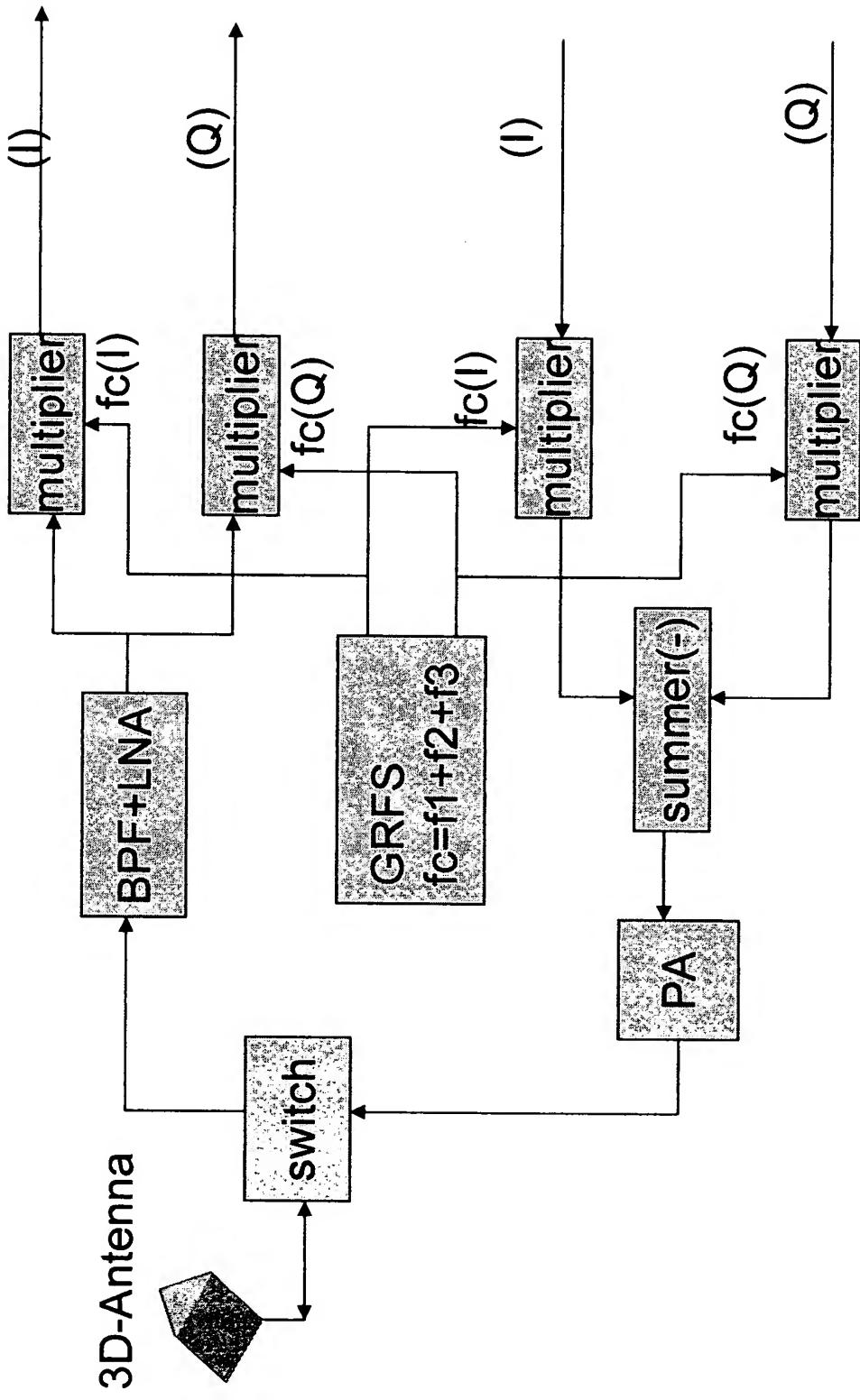


FIG.3 Direct Conversion Transmitter and multi-stage receiver

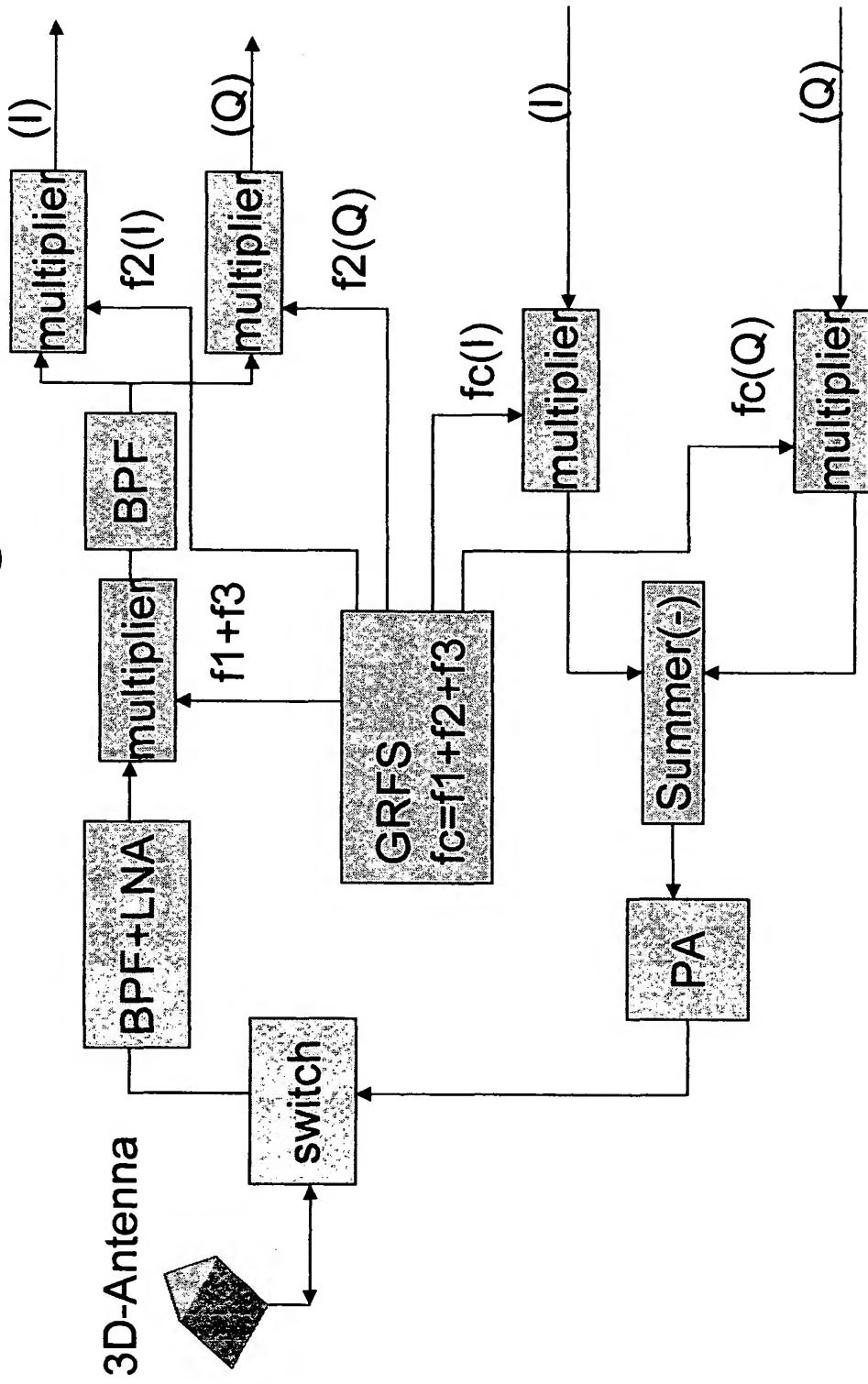
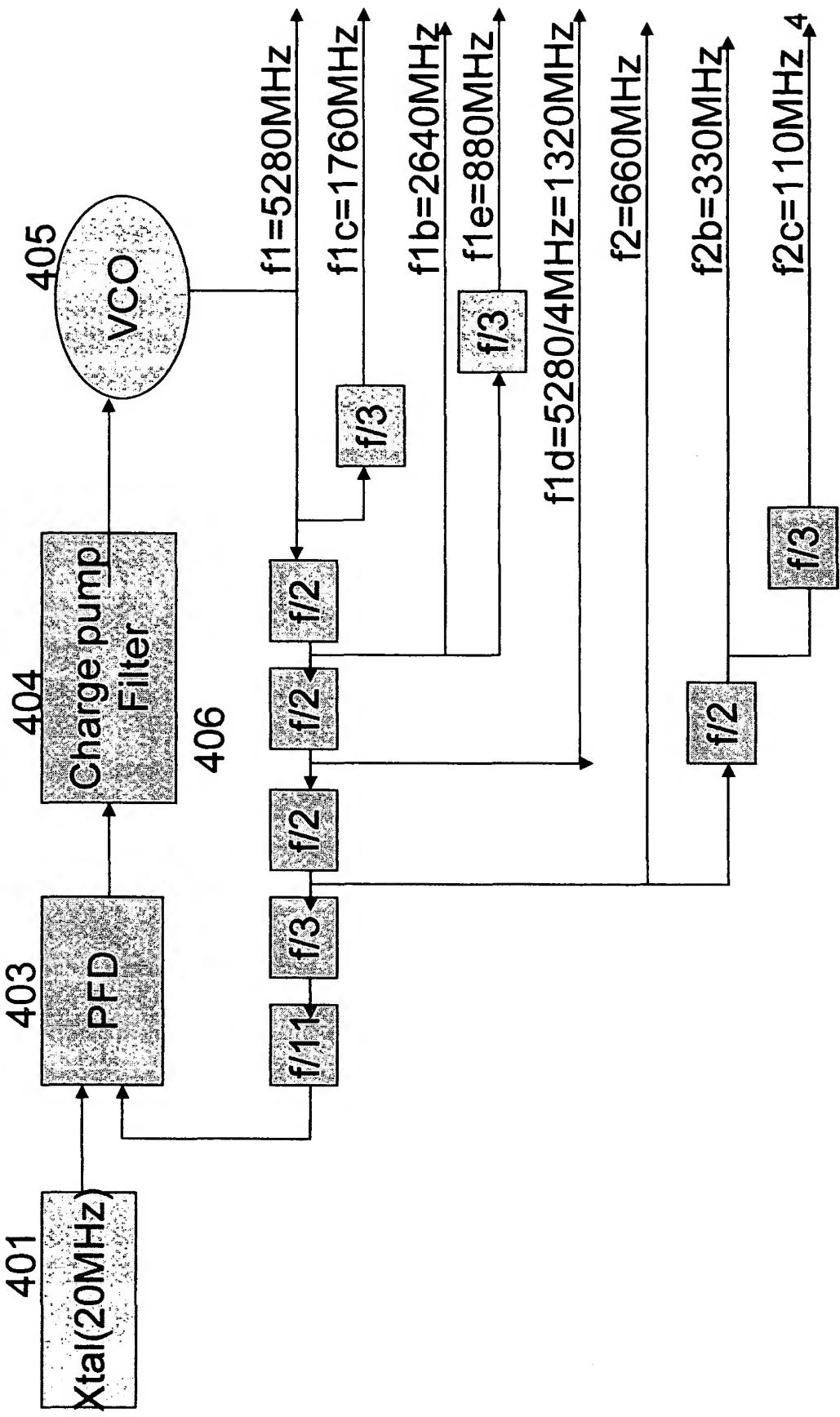
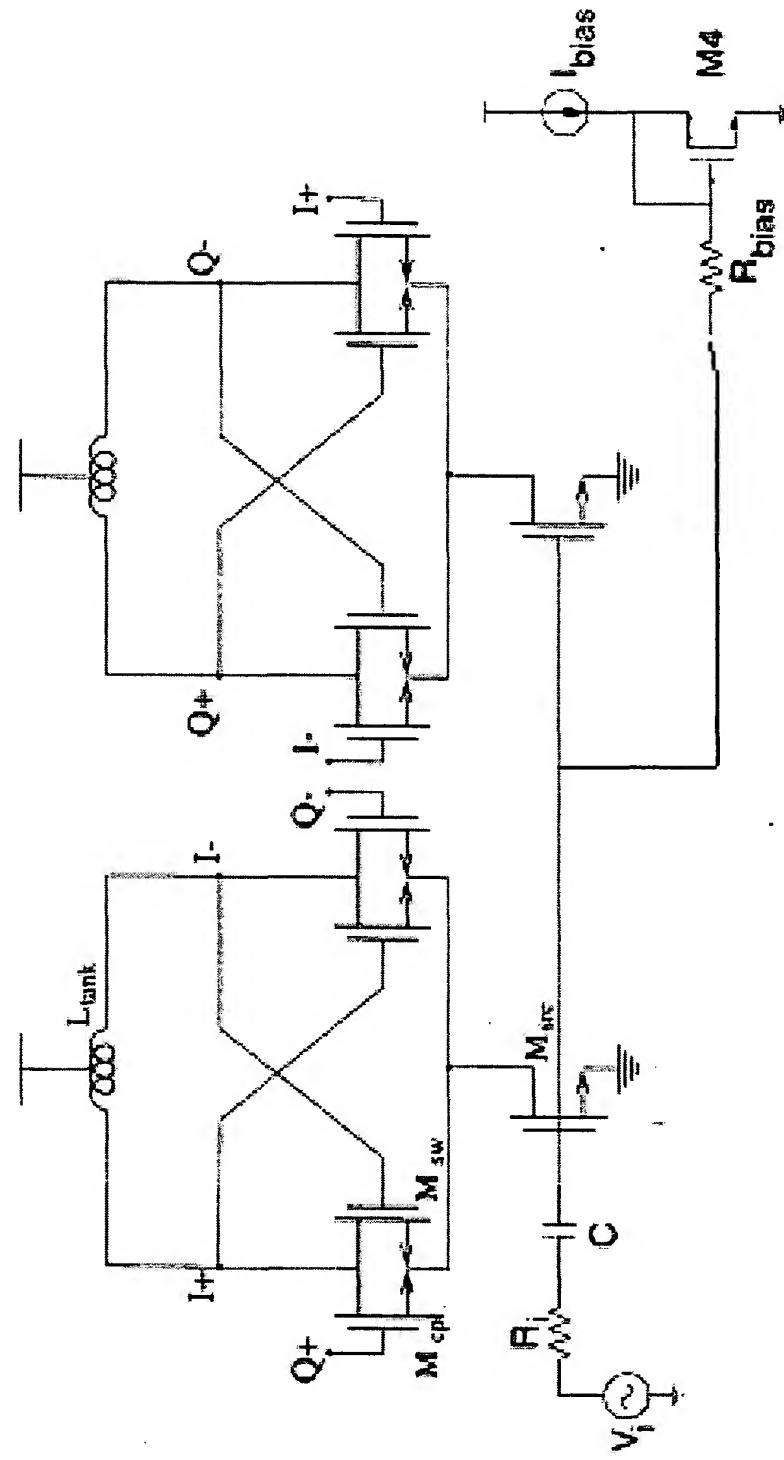


FIG.4 frequency generator PLLs



FIGS.5a Superharmonic parallel Quadrature injection locked frequency dividers



FIGS.5b Superharmonic Serial Quadrature Injection-Locked Frequency Divider

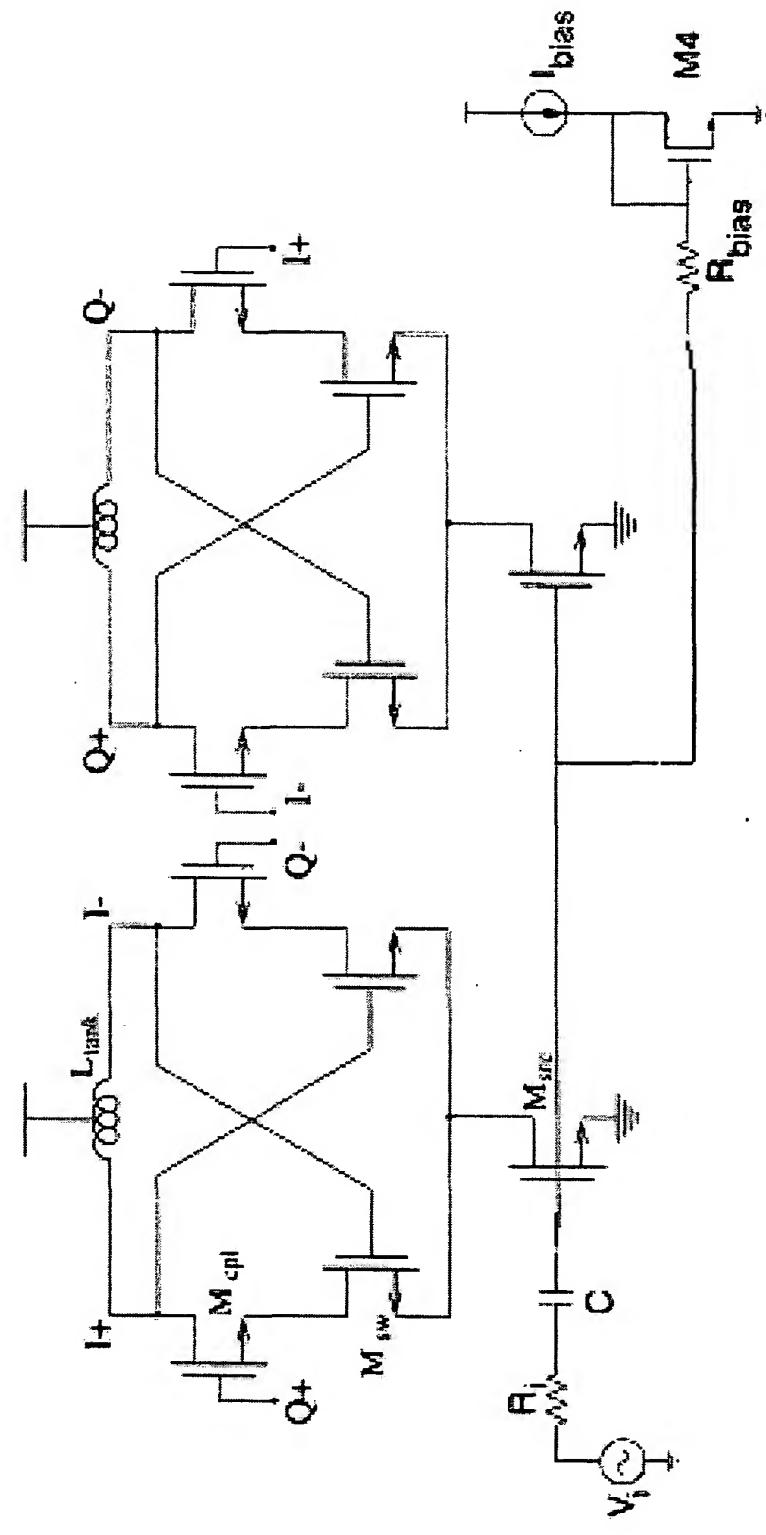


Fig6.Mixed-Signal Clock Generator

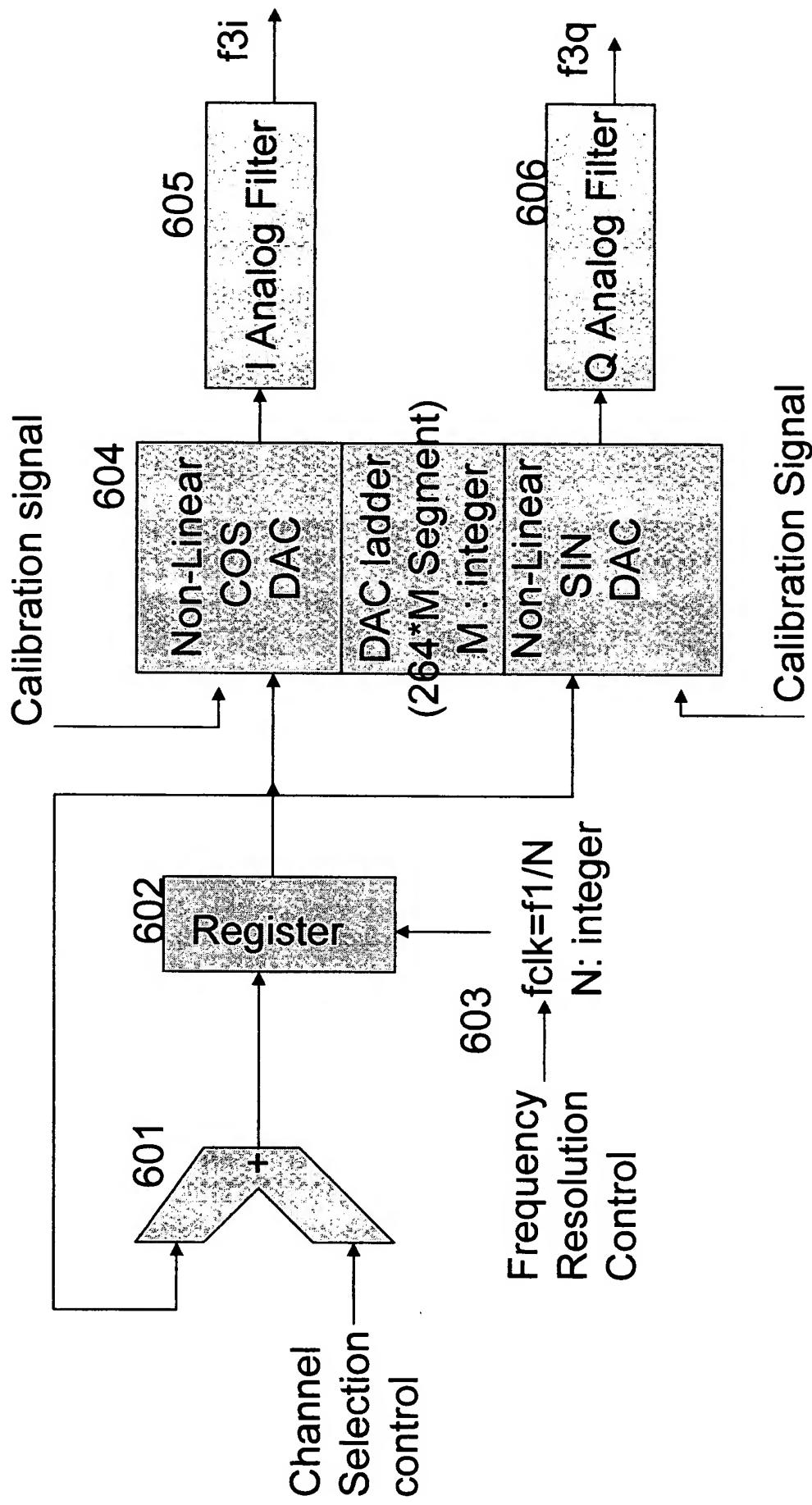
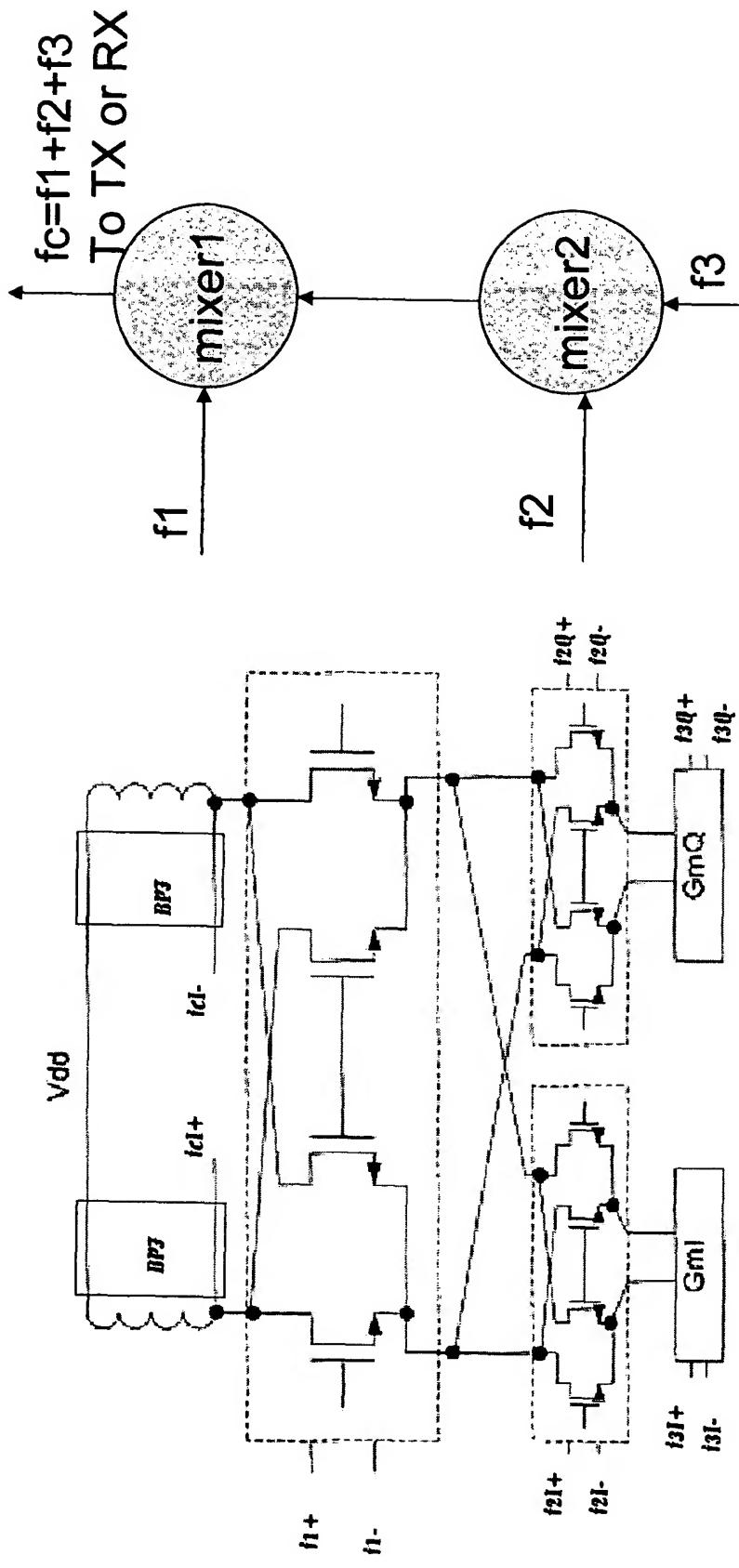


Fig7.Two kinds of three input mixers

mixer: a^*b+c^*d



**Mixed-Signal Wavegen
for Channel Selection**

FIG.8 Direct Conversion transceiver IEEE802.11a/b/g

Unit:MHz

11a-low5Gband fc=5180:20:5320 f1=5280 f2=0 f3= -100:20:40

11a-high5Gband fc=5745:0:5805 f1=5940 f2=0 f3=-195:20:-135

11b fc=2412:5:2472 f1=2420 f2=0 f3=-8:5:52

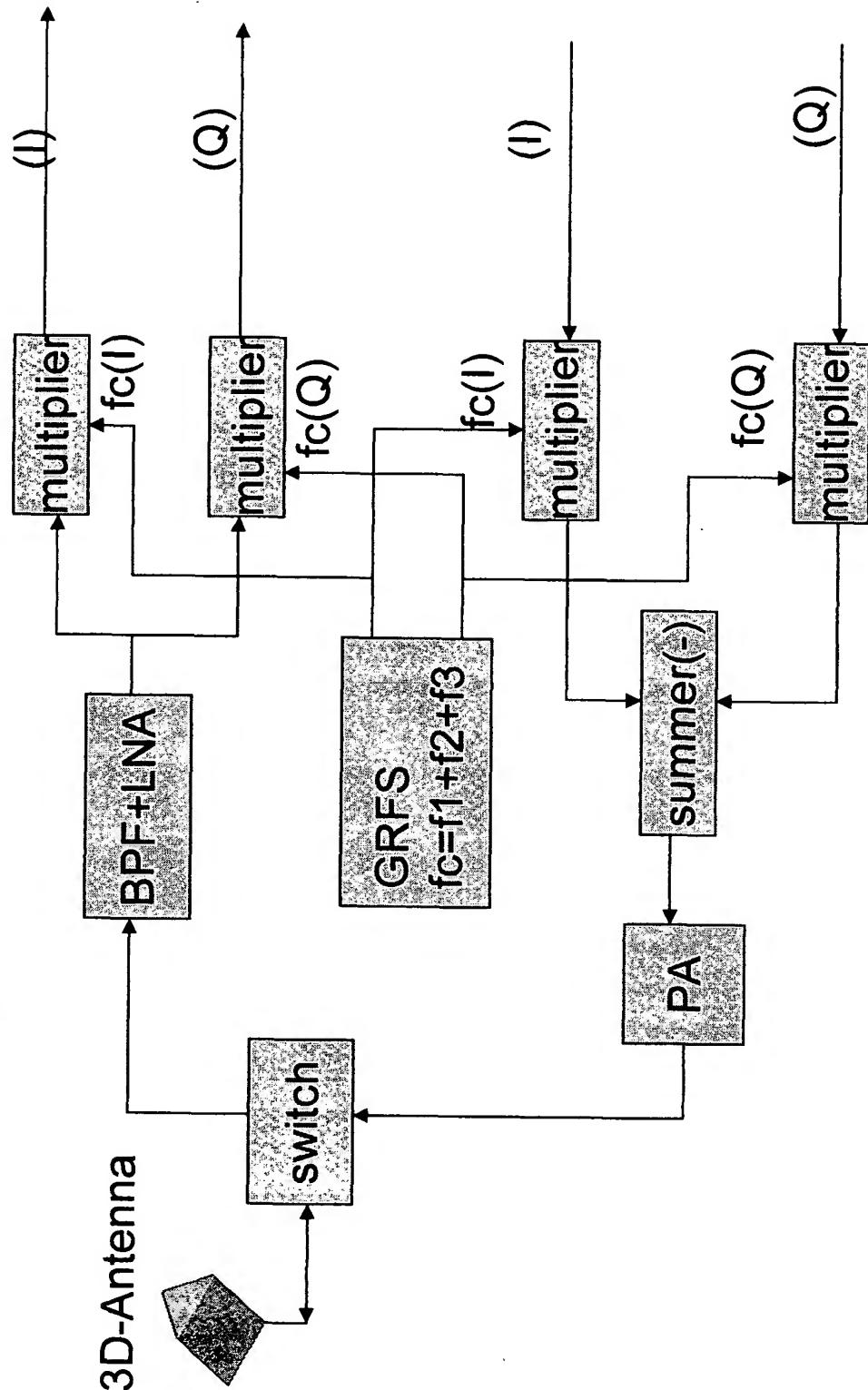


FIG. 9 Direct TX, High-IF RX transceiver IEEE802.11a/b/g

Unit:MHz

11a-low5Gband fc=5180:20:5320 f1=4620 f2=660 f3= -100:20:40

11a-high5Gband fc=5745:0:5805 f1=6600 f2=-660 f3= -195:20:-135

11b fc=2412:5:2472 f1=3080 f2=-660 f3= -8:5:52

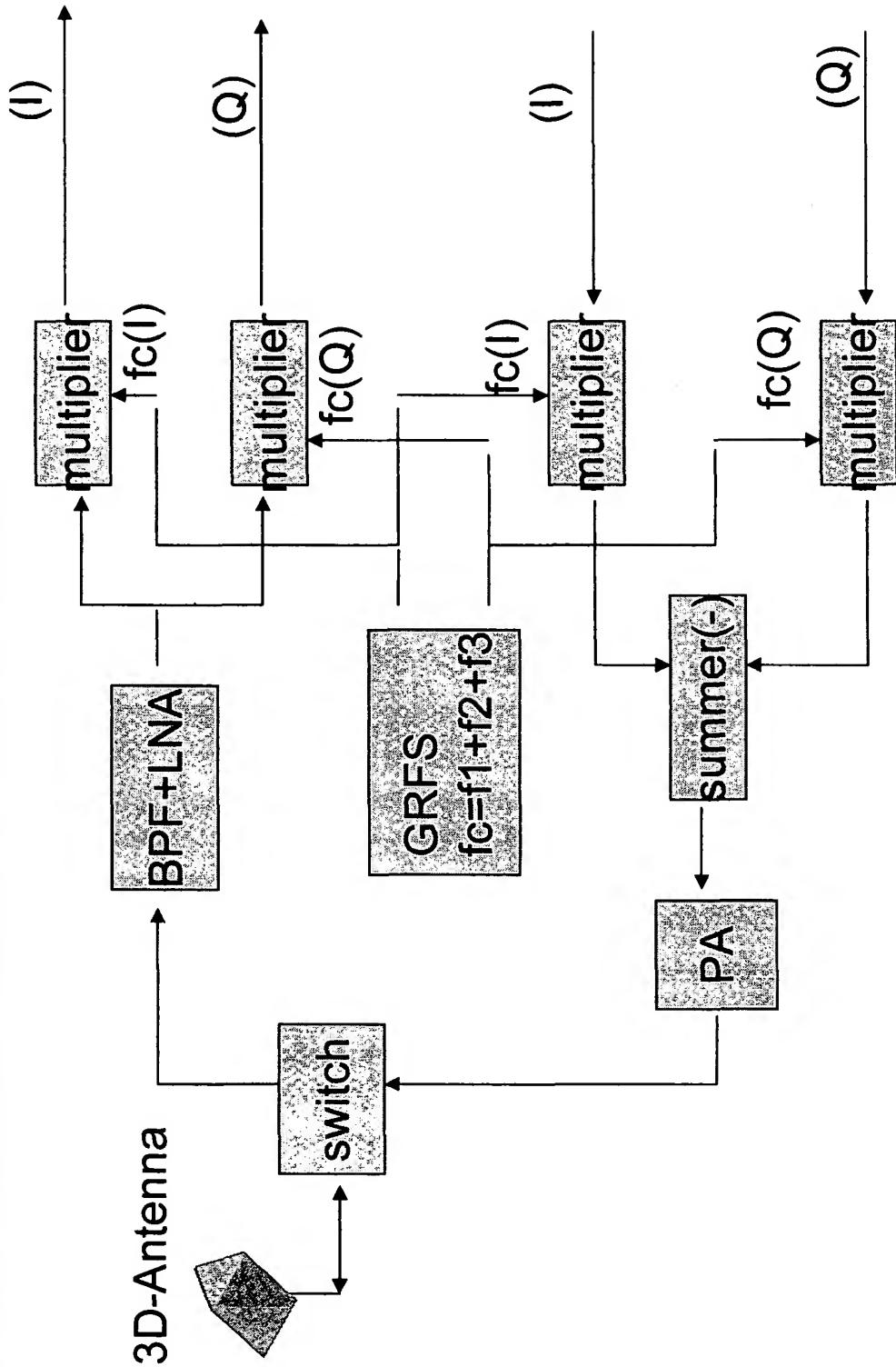


FIG. 10 Direct TX Low-IF RX transceiver IEEE802.11a/b/g

Unit:MHz
 11a-low5Gband $f_c=5180:20:5320$ $f_1=5280$ $f_2=20$ $f_3=-80:20:60$
 11a-high5Gband $f_c=5745:0:5805$ $f_1=5940$ $f_2=20$ $f_3=-175:20:-115$
 11b $f_c=2412:5:2472$ $f_1=2420$ $f_2=22$ $f_3=-30:5:30$

